

Fastclus Analysis-Standardized data

The FASTCLUS Procedure

Replace=FULL Radius=0 Maxclusters=3 Impute Maxiter=100 Converge=0

Statistics for Variables				
Variable	Total STD	Within STD	R-Square	RSQ/(1-RSQ)
Y1	1.00000	0.48358	0.771294	3.372418
Y3	1.00000	0.57446	0.677248	2.098353
Y4	1.00000	0.61507	0.630007	1.702755
OVER-ALL	1.00000	0.56040	0.692850	2.255733

Pseudo F Statistic =	100.38
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Cluster Means			
Cluster	Y1	Y3	Y4
1	-0.164318445	-0.161184358	-0.318232938
2	1.698325603	1.598506633	-0.702767083
3	-0.991701039	-0.915473654	1.472492601

Cluster Standard Deviations			
Cluster	Y1	Y3	Y4
1	0.463930980	0.430307354	0.482799798
2	0.735078279	1.066983994	0.295352706
3	0.169257881	0.246692124	1.017904362

S1-S3 univariate skewness, r1-r3 univariate kurtosis

Obs	S1	S2	S3	R1	R2	R3
1	0.49402	3.06987	1.43064	1.58155	18.8430	4.85351

S1-S3 univariate skewness, r1-r3 univariate kurtosis

Multivariate normality test statistics	
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M_SKEW	
15.311	Multivariate skewness

CHI_SKEW	
234.771	skewness chisquare

PVALSKEW	
0.000	skewness P-value

M_KURT	
41.447	Multivariate kurtosis

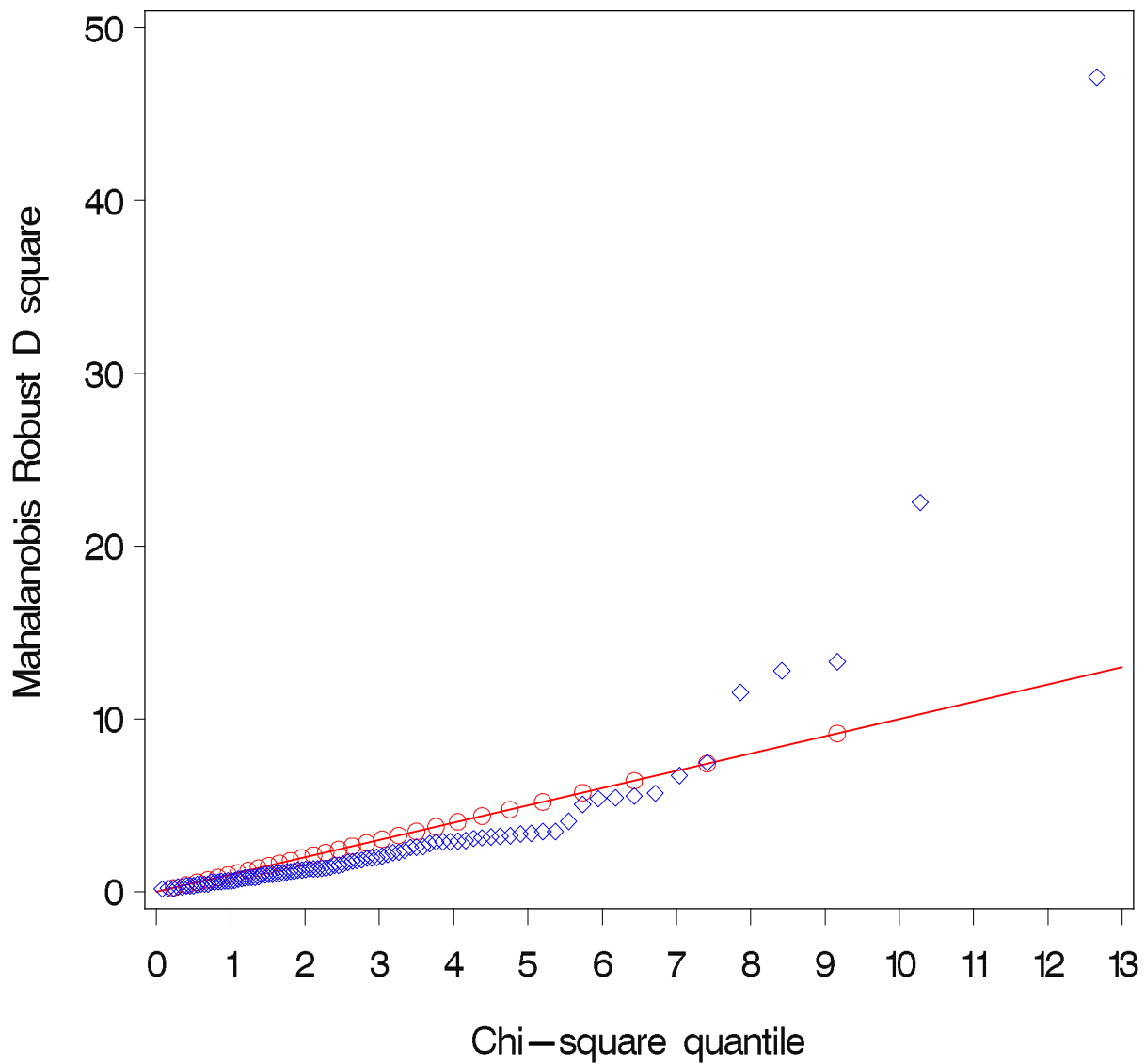
Z_KURT	
23.157	kurtosis z-value

PVALKURT	
0.000	kurtosis P-value

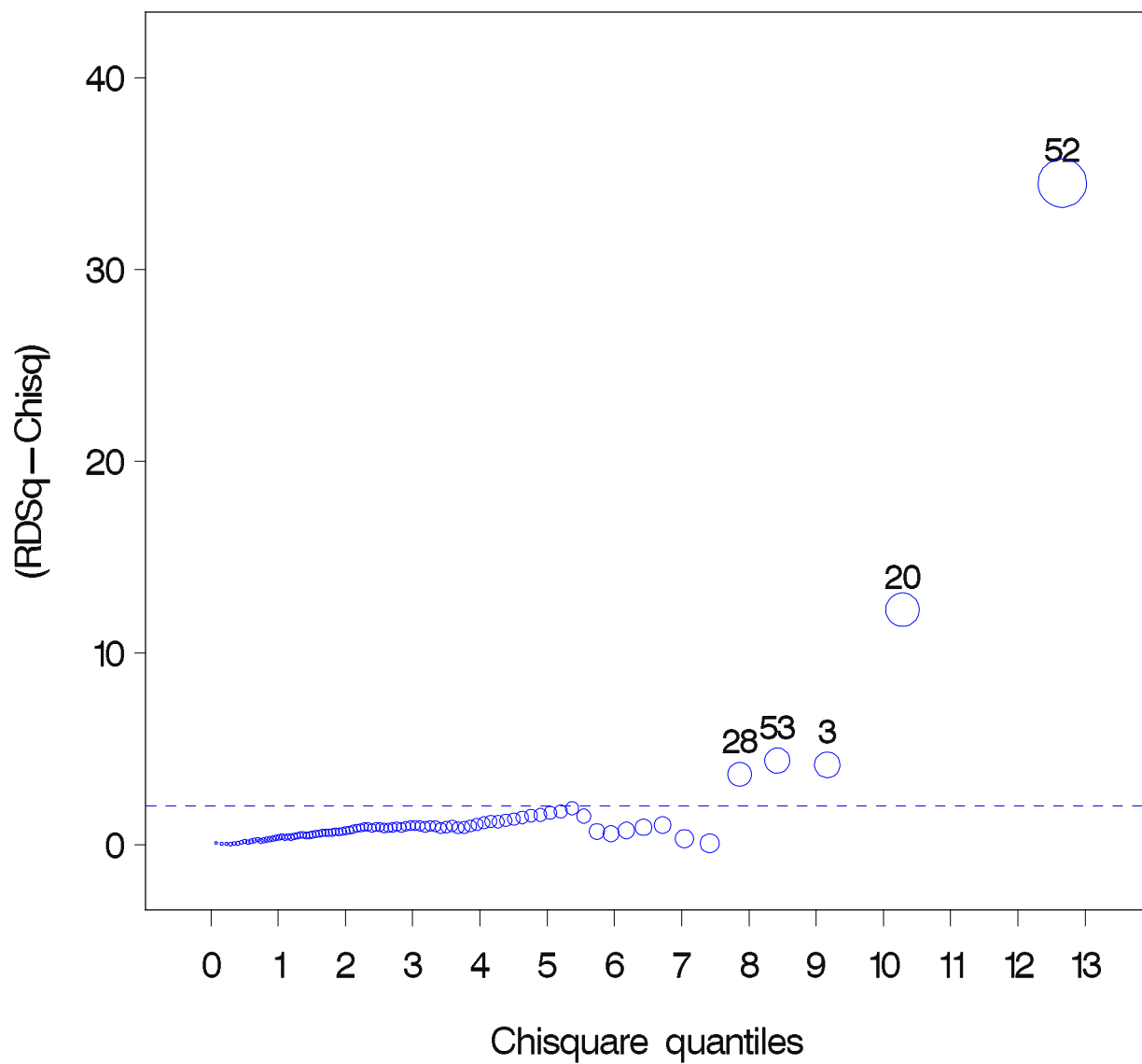
Influential/outlier observations

CLUSTER	ID	RDSQ	CHISQ	DIFF
2	52	100.133	12.6592	34.4996
3	20	30.382	10.2834	12.2482
2	53	15.085	8.4224	4.3781
3	3	15.810	9.1651	4.1597
2	28	13.367	7.8638	3.6658

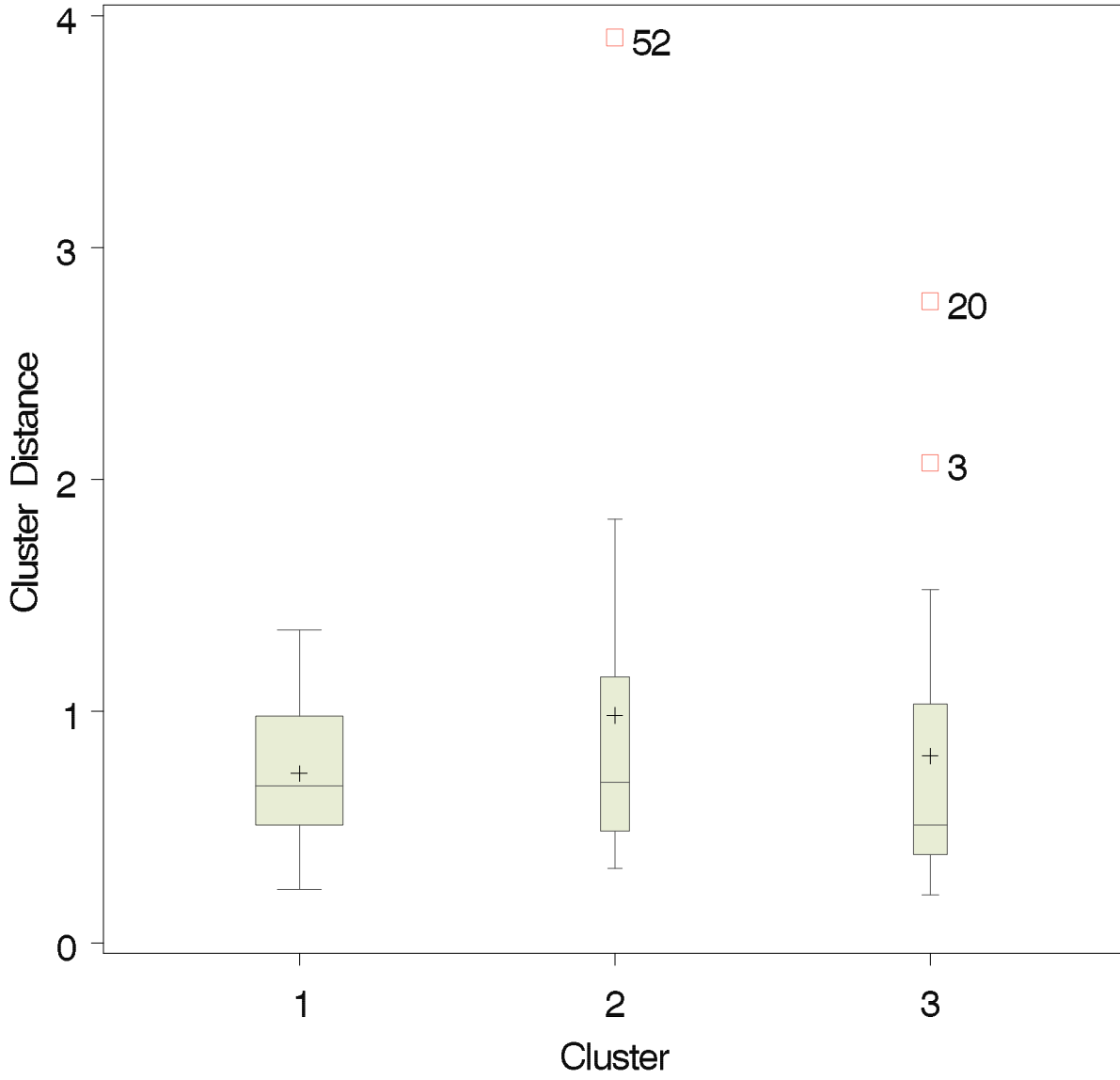
Q-Q plot checking for multivariate normality



Influential / outlier detection plot



Variation in cluster distance



Disjoint cluster analysis
Canonical discriminant analysis of cluster

The CANDISC Procedure

Observations	92	DF Total	91
Variables	3	DF Within Classes	89
Classes	3	DF Between Classes	2

Disjoint cluster analysis
Canonical discriminant analysis of cluster

The CANDISC Procedure

Squared Distance to CLUSTER			
From CLUSTER	1	2	3
1	0	15.84514	9.14285
2	15.84514	0	34.59884
3	9.14285	34.59884	0

Prob > Mahalanobis Distance for Squared Distance to CLUSTER			
From CLUSTER	1	2	3
1	1.0000	<.0001	<.0001
2	<.0001	1.0000	<.0001
3	<.0001	<.0001	1.0000

Disjoint cluster analysis
Canonical discriminant analysis of cluster

The CANDISC Procedure

Multivariate Statistics and F Approximations					
S=2 M=0 N=42.5					
Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.11628870	56.04	6	174	<.0001
Pillai's Trace	1.24710657	48.59	6	176	<.0001
Hotelling-Lawley Trace	4.47434722	64.52	6	114.24	<.0001
Roy's Greatest Root	3.60830644	105.84	3	88	<.0001

NOTE: F Statistic for Roy's Greatest Root is an upper bound.

NOTE: F Statistic for Wilks' Lambda is exact.

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The CANDISC Procedure

	Canonical Correlation	Adjusted Canonical Correlation	Approximate Standard Error	Squared Canonical Correlation	Eigenvalues of $\text{Inv}(E)*H = \text{CanRsqr}/(1-\text{CanRsqr})$			
					Eigenvalue	Difference	Proportion	Cumulative
1	0.884873	0.881035	0.022748	0.783001	3.6083	2.7423	0.8064	0.8064
2	0.681253	.	0.056177	0.464106	0.8660		0.1936	1.0000

Test of H0: The canonical correlations in the current row and all that follow are zero					
	Likelihood Ratio	Approximate F Value	Num DF	Den DF	Pr > F
1	0.11628870	56.04	6	174	<.0001
2	0.53589397	38.11	2	88	<.0001

Disjoint cluster analysis
Canonical discriminant analysis of cluster

The CANDISC Procedure

Total Canonical Structure			
Variable	Label	CAN1	CAN2
Y1	minprce	0.985757	0.149972
Y3	mxprce	0.922455	0.153778
Y4	ctympg	-0.725516	0.685136

Disjoint cluster analysis
Canonical discriminant analysis of cluster

The CANDISC Procedure

Class Means on Canonical Variables		
CLUSTER	CAN1	CAN2
1	-0.175576830	-0.745796347
2	3.435430641	0.929246631
3	-2.437279762	1.261080317

Cluster=1

Obs	ID	CAN1	CAN2	Y1	Y3	Y4
1	40	-1.91261	-1.05112	8.4	11.9	23
2	51	-1.83031	-1.05856	8.4	14.2	23
3	86	-1.76946	-1.26299	9	11	22
4	91	-1.71081	-0.90706	9.4	12.8	23
5	60	-1.48908	-1.06112	10.4	12.2	22
6	35	-1.20699	-0.62800	11.4	17.4	23
7	45	-1.14522	-0.84875	11.9	14.7	22
8	6	-1.13090	-0.07888	13	14	24
9	13	-1.12188	-0.11216	12.8	15.2	24
10	24	-1.10633	-1.03080	10.8	21	22
11	64	-1.04969	0.19386	12.9	18.8	25
12	38	-0.97702	-0.09279	13	18.3	24
13	48	-0.97064	-0.34099	13.3	15	23
14	56	-0.89176	-1.38314	12.4	15.3	20
15	72	-0.88942	0.70291	14.3	18.7	26
16	19	-0.73757	0.01540	13.8	21.2	24
17	87	-0.69633	-0.21972	14.2	18.4	23
18	18	-0.69322	0.37263	14.2	22.6	25
19	89	-0.69197	-0.17142	14.5	17.1	23
20	68	-0.68482	-0.94323	13.4	18.4	21
21	12	-0.66210	-0.51913	14.2	17.3	22
22	4	-0.59488	-1.54399	13.4	16.8	19
23	22	-0.51895	-0.73100	14.8	16.4	21
24	27	-0.40848	-1.31739	14.9	14.9	19
25	23	-0.35294	-0.38478	15.2	21.2	22
26	8	-0.32851	-1.47069	14	21.4	19
27	7	-0.25787	-1.65978	14.7	18	18
28	92	-0.18629	0.07501	16.3	22.7	23
29	10	-0.14181	-2.14512	13.6	24.4	17
30	76	-0.14117	0.48085	17	22.7	24
31	1	-0.08392	-1.26558	15.4	21.6	19
32	54	-0.08267	-0.64060	15.6	24.8	21
33	63	-0.01561	-2.57062	14.7	18.6	15
34	39	0.17064	-0.33890	17.6	22.4	21
35	90	0.18433	-0.65268	17.5	21.2	20
36	34	0.19023	-2.62169	14.5	25.3	15
37	49	0.19678	-1.39251	16.6	21.7	18

Cluster=1

Obs	ID	CAN1	CAN2	Y1	Y3	Y4
38	73	0.23678	-0.51135	18.4	18.4	20
39	83	0.28018	-1.68013	16.7	21.5	17
40	31	0.30616	-1.69871	16.6	22.7	17
41	30	0.43266	-1.48292	18	19.6	17
42	55	0.60989	-0.95918	19.5	19.5	18
43	80	0.62218	-0.66397	19.5	21.9	19
44	42	0.68286	-0.60454	19.9	21.7	19
45	29	0.73297	0.16209	21	22	21
46	66	0.76220	-1.07033	18.9	26.6	18
47	77	0.79038	-0.87811	20.1	21.7	18
48	50	0.87361	-0.70293	19.4	29.4	19
49	46	0.92232	0.27482	21.8	23.5	21
50	17	0.92697	-1.15014	18.5	33.1	18
51	74	1.33683	-0.47307	22.9	23.7	18
52	71	1.47389	-0.56661	22.4	29.9	18
53	26	1.47608	-1.12698	22.6	24.9	16
54	75	1.68364	0.39658	24.8	28.5	20
55	57	1.93291	0.32119	26.3	26.3	19

Cluster=2

Obs	ID	CAN1	CAN2	Y1	Y3	Y4
56	53	1.22820	-0.29260	20.3	37.1	20
57	16	1.62544	0.81594	23.7	36.2	22
58	44	2.00619	0.54596	25.9	32.3	20
59	62	2.28518	0.18779	27.5	28.4	18
60	47	2.51655	1.08411	29.5	29.5	20
61	81	2.62499	0.99315	29	34.9	20
62	21	2.94208	0.40432	29.2	38.7	18
63	5	3.35098	0.92335	30.8	44.6	19
64	67	3.35349	0.60641	32.5	32.5	17
65	41	3.58937	0.71492	33.3	35.3	17
66	43	3.64787	0.36463	33	36.3	16
67	9	3.76395	1.22268	34.7	35.6	18
68	88	3.79179	1.17147	34.4	37.8	18
69	85	4.03172	0.88593	34.6	41.5	17
70	70	4.64009	1.00529	37.5	42.7	16

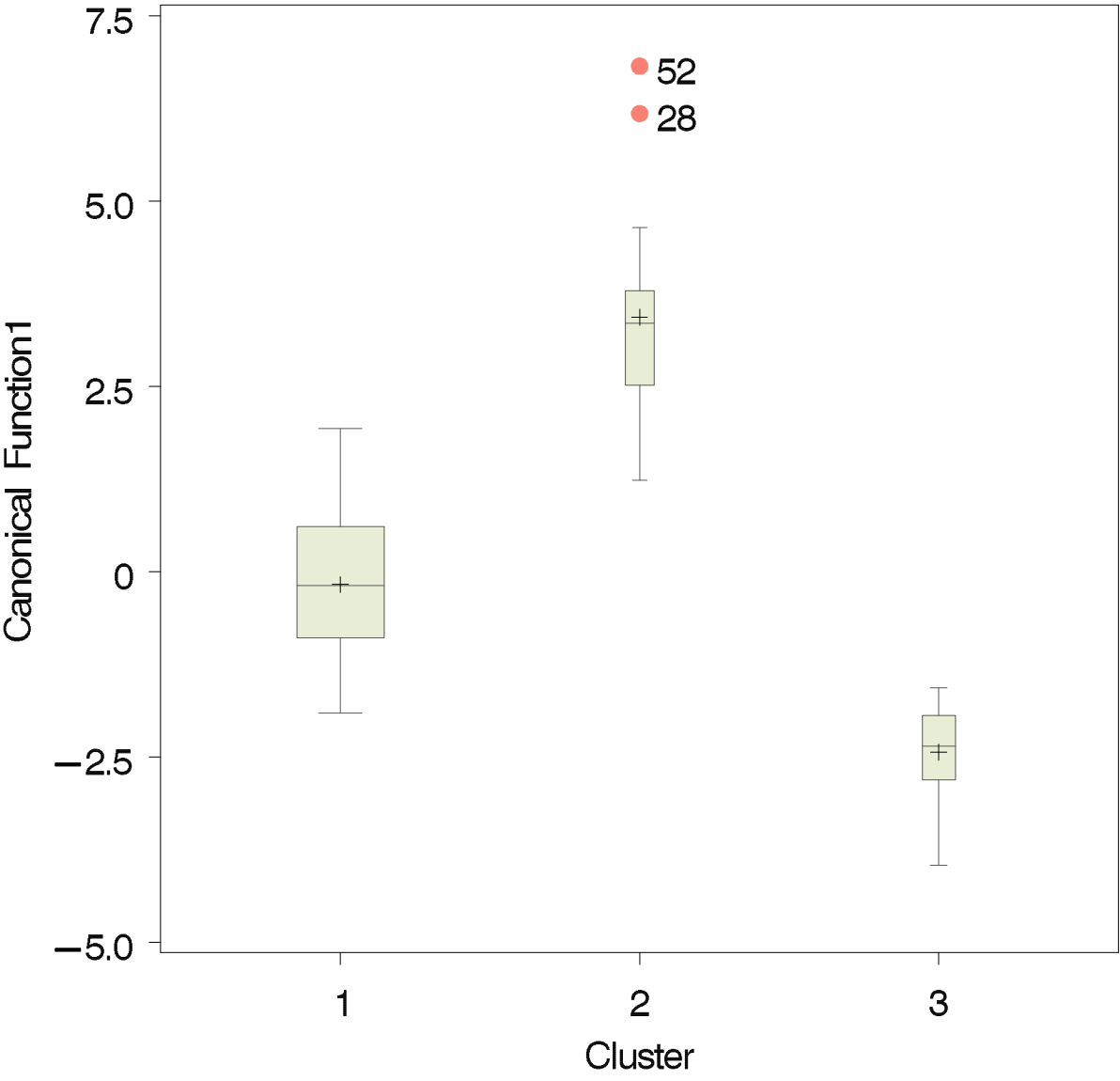
Cluster=2

Obs	ID	CAN1	CAN2	Y1	Y3	Y4
71	28	6.18188	2.44441	45.4	50.4	17
72	52	6.82257	2.71944	43.8	80	19

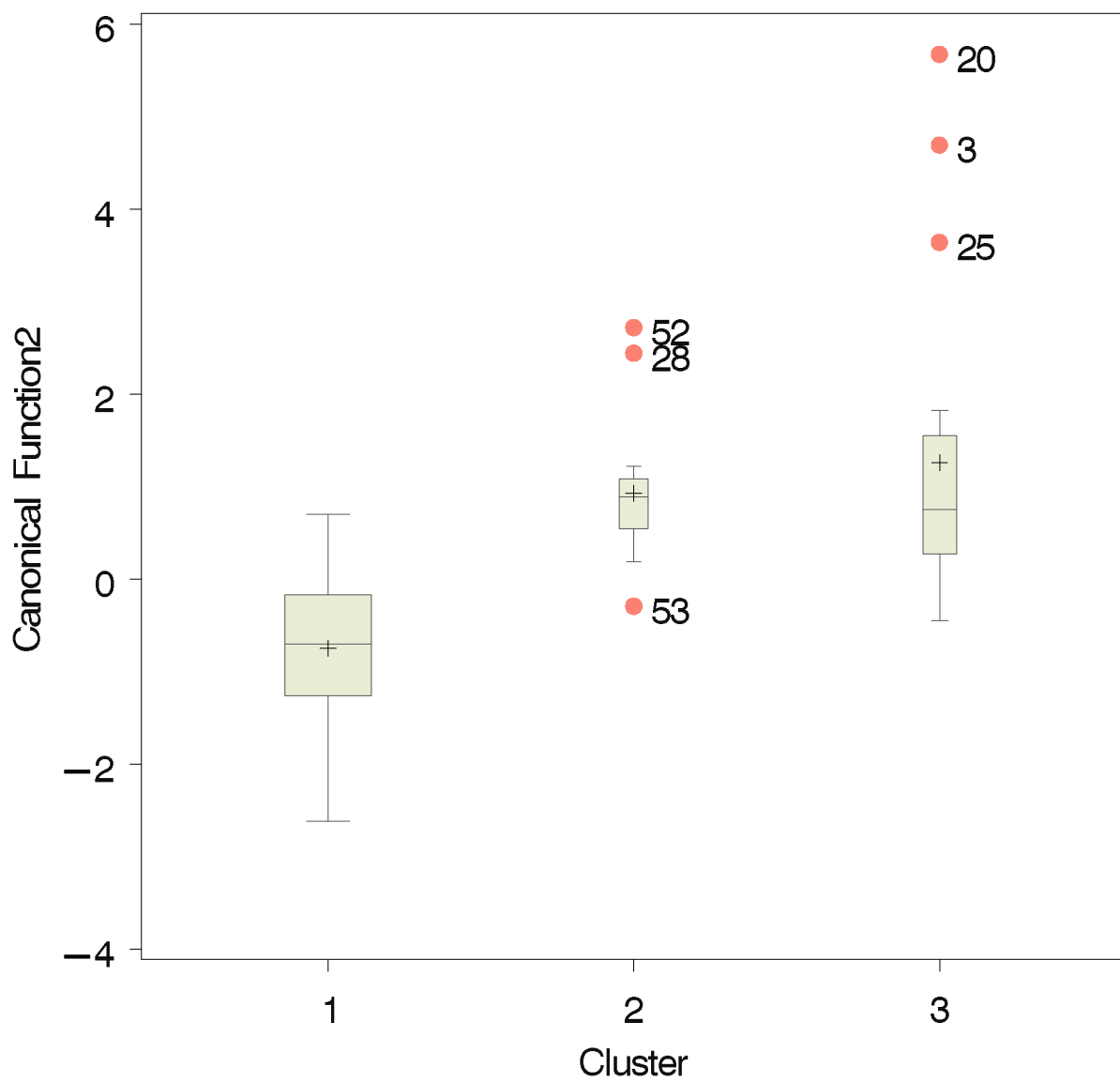
Cluster=3

Obs	ID	CAN1	CAN2	Y1	Y3	Y4
73	20	-3.96162	5.67344	6.7	10	46
74	25	-3.34469	3.64085	7.3	10	39
75	3	-3.17137	4.69265	8.4	15.8	42
76	37	-2.92101	1.82466	7.3	9.5	33
77	82	-2.89892	1.16511	6.9	7.9	31
78	61	-2.72217	0.54027	6.8	9.2	29
79	32	-2.68031	1.58773	7.8	11.8	32
80	84	-2.60687	1.34970	8.2	9.9	31
81	58	-2.48551	0.69741	7.9	10.6	29
82	69	-2.43712	0.66058	7.7	12.9	29
83	36	-2.27437	0.67832	7.9	16.5	29
84	2	-2.19595	0.80108	8.7	14.9	29
85	15	-2.10913	0.57806	9.2	12.9	28
86	79	-2.09481	-0.39333	8.7	9.5	25
87	14	-2.04689	-0.03642	9.1	11	26
88	65	-1.84477	1.52009	11.5	13.5	30
89	78	-1.84228	0.82985	10.9	12.3	28
90	59	-1.81382	-0.45119	8.5	18.3	25
91	11	-1.72511	-0.13460	10.5	11.3	25
92	33	-1.56890	-0.00265	11.4	11.4	25

Cluster separation based on Canonical Function1



Cluster separation based on Canonical Function2



Canonical Plot of Cluster separation

